

Listing of Claims

Please amend claims 1-11, 13-19, 22 and 29 as shown below.

This listing of claims will replace all prior versions of claims and listings of claims in the application:

1. A pump system for metering a flow of a gaseous fuel from a fuel supply into a pressurized combustion chamber, the system comprising:

a. a pump, the pump having an inlet and an outlet, the inlet connected to the fuel supply and the outlet connected to the combustion chamber; and

b. a controller in signal communication with the pump, the controller modulating the pump with a ~~control signal~~ signal such that to control the fuel flow to the chamber is metered.

2. A pump system according to claim 1, wherein the pump is a linear piston pump and the controller modulates the pump with a half wave alternating current ~~control signal~~ signal to control-meter the flow to the chamber.

3. A pump system according to claim 2 wherein the amplitude of the ~~control signal~~ signal varies.

4. A pump system according to claim 2, wherein the ~~control signal~~ signal further includes a fixed direct current bias.

5. A pump system according to claim 2, wherein the ~~control signal~~ signal further includes a variable direct current bias.

6. A pump system according to claim 2, wherein the frequency of the ~~control signal~~ signal varies.

7. A pump system according to claim 1, wherein the pump is a linear piston pump and

the controller modulates the pump with a pulse-width-modulated direct current ~~control signal~~ signal to control-meter the flow to the chamber.

8. A pump system according to claim 7, wherein the ~~control signal~~ signal further includes a fixed direct current bias.

9. A pump system according to claim 7, wherein the ~~control signal~~ signal

further includes a variable direct current bias.

10. A pump system according to claim 7, wherein the amplitude of the ~~control~~
~~signal-signal~~ varies.

11. A pump system according to claim 7, wherein the frequency of the ~~control~~
~~signal-signal~~ varies.

12. A pump system according to claim 1, wherein the pump is a diaphragm
piston pump.

13. A pump system according to claim 12, wherein the pump is a diaphragm
piston pump and the controller modulates the pump with an alternating
current ~~control-signal-signal~~ to ~~control-meter~~ the flow to the chamber.

14. A pump system according to claim 13 wherein the amplitude of the ~~control~~
~~signal-signal~~ varies.

15. A pump system according to claim 13, wherein the frequency of the ~~control~~
~~signal-signal~~ varies.

16. A pump system according to claim 1, wherein the pump is a diaphragm
piston pump including a solenoidal drive coil and the controller modulates the
pump with a pulse-width-modulated direct current ~~control-signal-signal~~ to
~~control-meter~~ the flow to the chamber.

17. A pump system according to claim 16 wherein the ~~control-signal-signal~~
varies in frequency.

18. A pump system according to claim 16, wherein the ~~control-signal-signal~~
varies in amplitude.

19. A pump system according to claim 1, wherein the controller modulates the
pump with a ~~control-signal-signal~~ to ~~control-meter~~ the flow to the chamber
such that a temperature is maintained at a specified temperature.

20. A pump system according to claim 19, wherein the chamber is part of a
Stirling engine and the temperature is one of a temperature of a heater tube of
the engine and a temperature of a heater head of the engine.

21. A pump system according to claim 19, wherein the chamber is part of a
steam engine and the temperature is a temperature of a heater tube of the
engine.

22. A pump system according to claim 1, wherein the controller modulates the pump with a ~~control signal~~ signal to ~~control~~ meter the flow to the chamber such that a fuel/air ratio in a burner is maintained at a specified ratio.

23. A pump system according to claim 1, wherein the chamber is part of an internal combustion engine and the controller modulates the pump such that a specified engine power is obtained.

24. A pump system according to claim 1, wherein the chamber is part of an internal combustion engine and the controller modulates the pump such that a specified engine speed is maintained.

25. A pump system according to claim 1, further including:

c. a filter to reduce fuel flow pulsations.

26. A pump system according to claim 25 wherein the filter is an acoustic filter.

27. A pump system according to claim 26, wherein the filter includes a volume connected to the pump outlet and an orifice restrictor connected to the volume.

28. A pump system according to claim 26, wherein the filter includes a volume connected to the pump outlet and a tube connected to the volume such that the tube provides an acoustic reactive impedance.

29. A method for controlling a flow of a gaseous fuel from a fuel supply into a pressurized combustion chamber, the method comprising:

a. providing a pump, the pump having an inlet and an outlet, the inlet connected to the fuel supply and the outlet connected to the combustion chamber; and

b. modulating the pump with a signal such that the fuel flow to the combustion chamber is metered.

30. A method according to claim 29, wherein the pump is a linear piston pump, and modulating the pump includes modulating the pump with a half wave alternating current signal.

31. A method according to claim 30, wherein modulating the pump includes varying the amplitude of the signal.

32. A method according to claim 30, wherein modulating the pump includes

apply a direct current bias to the signal.

33. A method according to claim 30, wherein modulating the pump includes varying a direct current bias for the signal.

34. A method according to claim 30, wherein modulating the pump includes varying the frequency of the signal.

35. A method according to claim 29, wherein the pump is a linear piston pump, and

modulating the pump includes modulating the pump with a pulse-width-modulated direct current signal.

36. A method according to claim 35, wherein modulating the pump further includes applying a direct current bias to the signal.

37. A method according to claim 35, wherein modulating the pump further includes varying a direct current bias for the signal.

38. A method according to claim 35, wherein modulating the pump further includes varying the amplitude of the signal.

39. A method according to claim 35, wherein modulating the pump further includes varying the frequency of the signal.

40. A method according to claim 29, wherein the pump is a diaphragm piston pump, and modulating the pump includes modulating the pump with an alternating current signal.

41. A method according to claim 40 wherein modulating the pump includes at least one of varying the amplitude of the signal, varying the frequency of the signal, and varying both the amplitude and the frequency of the signal.

42. A method according to claim 29, wherein the pump is a diaphragm piston pump with a solenoidal drive coil and modulating the pump includes modulating the pump with a pulse-width-modulated direct current signal.

43. A method according to claim 42, further including varying the frequency of the signal.

44. A method according to claim 42, further including varying the amplitude of the signal.

45. A method according to claim 29, wherein the pump is modulated such that

a temperature is maintained at a specified temperature.

46. A method according to claim 29, wherein the pump is modulated such that a fuel/air ratio for a burner is maintained at a specified ratio.

47. A method according to claim 45 wherein the chamber is part of a Stirling engine and the temperature is one of a temperature of a heater tube of the engine and a temperature of a heater head of the engine.

48. A method according to claim 45, wherein the chamber is part of a steam engine and the temperature is a temperature of a heater tube of the engine.

49. A method according to claim 29, wherein the chamber is part of an internal combustion engine and the controller modulates the pump such that a specified engine speed is maintained.

50. A method according to claim 29, wherein the chamber is part of an internal combustion engine and the controller modulates the pump such that a specified engine power is obtained.

51. A method according to claim 29, further including:

c. filtering the fuel flow with a filter to reduce fuel pulsations.

52. A method according to claim 51 wherein the filter is an acoustic filter.

53. A method according to claim 52, wherein the filter includes a volume connected to the pump outlet and an orifice restrictor connected to the volume.

54. A method according to claim 52, wherein the filter includes a volume connected to the pump outlet and a tube connected to the volume such that the tube provides an acoustic reactive impedance.